

MA104 Lesson 28

Parametric Equations

Friday, 29 February, 2008

Outline

- 1 Admin
- 2 Last Class
- 3 Parametric Equations
 - Course Guide
 - Why do we need Parametric Equations?
 - Animate Book Examples
 - Do Problem Help
 - Neat Examples
- 4 Look Forward - PARAMETRIC EQUATIONS II:
INTERSECTION AND COLLISION
 - Course Guide

Admin

- 1 Project I is still being graded
- 2 Two students in B hour need to take the Fundamental of Derivatives Test
- 3 Block II Homework/WPR II exercise
 - 1 Monday I will break you up into 4 groups based on the question you did worst on.
 - 2 You will re-do the problem and submit that to me on Thursday.
 - 3 You will brief the solution as a group on Thursday.
 - 4 Your Block II Homework will be the combined grade of the solution and the brief.

WPR II AAR

- 1 If you have questions regarding the grading of a question: write up your defense bring your write up and your test to me. I will consider your argument. I will not entertain any in class or in office questions without written defense.

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Objectives

- 1 Understand that parametric equations determine the coordinates of a point on a curve using functions of the same variable.
- 2 Determine the Cartesian equation of a function from a set of parametric equations and vice-versa.

READ

- 1 Stewart: Section 10.1, pages 621-624 (stop after the section on Graphing Devices).
- 2 Student Notes.

THINK ABOUT

- 1 What do parametric equations allow us to do that we can't accomplish using regular functions?

DO Problems

- 1 Section 10.1/ 1, 3, 5, 7 (instead of sketching use the "ParametricPlot" function in Mathematica to discover the direction of the curve), 33.

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- 2 Now we want to describe a curve given a third parameter like t where now we can talk about how x changes with time and how y changes with time.
- 3 Now our curve looks like $[x = f(t), y = g(t)]$.
- 4 So what happens if our function fails the Vertical Line Test? With parametric equations we can describe a particle's movement with respect to time instead of with respect to x or y .

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Animated Book Examples in Mathematica

Using Mathematica - Oh No, not Mathematica!

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Cool Examples

1[▶ Tribute to Sean Taylor](#)[▶ Another look at Sean Taylor's hit](#)**2**

Other Crazy examples

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Lesson 29 - PARAMETRIC EQUATIONS II: INTERSECTION AND COLLISION

1 OBJECTIVES:

- 1 Determine if the paths of two objects intersect given parametric equations modeling the paths of the objects in space.
- 2 Determine whether two objects collide given parametric equations modeling their motion in space.

2 READ:

- 1 Student Notes.

3 THINK ABOUT:

- 1 What does it mean for objects to intersect or collide in terms of modeling their motion with parametric equations?

4 DO:

- 1 Do Problems 1 and 2 - found at the end of the Student Notes.

Questions?

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